

CLAIMS

1. A process for the functionalization of polyolefins which comprises the treatment under shear conditions of polyolefins with an unsaturated monomer containing polar groups in the presence of at least one hydroperoxide as radicalic initiator.
2. The process according to claim 1, wherein the polyolefins are selected from saturated or unsaturated polyolefinic copolymers and relative mixtures.
3. The process according to claim 2, wherein the polyolefins are selected from:
  - copolymers of ethylene with  $\alpha$ -olefins;
  - copolymers of propylene with  $\alpha$ -olefins;
  - ethylene/propylene copolymers (EPM) with a molar propylene content ranging from 16% to 50%, and an Mw ranging from 10,000 to 200,000;
  - ethylene/propylene/non-conjugated diolefin (EPDM) terpolymers with a molar ethylene content ranging from 40 to 85%, from 15 to 70% of propylene and 2 to 10% molar of non-conjugated diene, the molecular weights Mw of the EPDM being within the range of 75,000 to 450,000;
  - thermoplastic elastomers deriving from butadiene and/or isoprene and styrene block copolymers, hydrogenated and non-hydrogenated.

4. The process according to claim 3, wherein the ethylene/propylene (EPM) copolymers have a molar propylene content ranging from 20% to 45%.
5. The process according to claim 3, wherein the ethylene/propylene/non-conjugated diolefin (EPDM) terpolymers have a molar ethylene content ranging from 40 to 70%, from 30 to 60% of propylene and from 0.5 to 20% of non-conjugated diene.
- 10 6. The process according to claim 5, wherein the ethylene/propylene/non-conjugated diolefin (EPDM) terpolymers have a molar content of non-conjugated diene ranging from 1 to 15% molar.
- 15 7. The process according to claim 6, wherein the ethylene/propylene/non-conjugated diolefin (EPDM) terpolymers have a molar content of non-conjugated diene ranging from 2 to 10% molar.
- 20 8. The process according to claim 5, wherein the ethylene/propylene/non-conjugated diolefin (EPDM) terpolymers have a molecular weight Mw ranging from 100,000 to 180,000.
9. The process according to claim 3, wherein the non-conjugated diolefins are selected from 1,4-hexadiene, 1,5-heptadiene, 1,6-octadiene, 1,4-cyclohexadiene, 5-methylene-2-norbornene, 5-ethylidene-2-norbornene.
- 25 10. The process according to claim 9, wherein the non-

conjugated diolefin is 5-ethylidene-2-norbornene.

11. The process according to claim 1, wherein the hydro-  
peroxide is selected from cumene hydroperoxide, hydro-  
gen peroxide, t-butyl hydroperoxide, 2,5-dihydro-  
5 peroxy-2,5-dimethyl hexane.
12. The process according to claim 1, wherein the concen-  
tration of hydroperoxide with respect to the polyole-  
fins ranges from 0.1 to 20% by weight.
13. The process according to claim 12, wherein the concen-  
10 tration of hydroperoxide with respect to the polyole-  
fins ranges from 0.2 to 10% by weight.
14. The process according to claim 13, wherein the concen-  
tration of hydroperoxide with respect to the polyole-  
fins ranges from 0.5% to 5% by weight.
- 15 15. The process according to claim 1, wherein the polar  
unsaturated monomers are selected from unsaturated  
carboxylic acids such as esters, amides, acids, metal-  
lic salts of acrylic acid, fumaric acid, itaconic  
acid, citraconic acid and maleic acid, maleic anhy-  
20 dride, esters of vinyl alcohol, vinyl silane deriva-  
tives, vinyl imidazole derivatives, vinyl oxazole de-  
rivatives, vinyl pyridine derivatives.
16. The process according to claim 15, wherein the polar  
unsaturated monomers are selected from maleic anhy-  
25 dride and its derivatives.

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17. The process according to claim 1, wherein the quantity of polar unsaturated monomers ranges from 0.1 to 10% with respect to the polyolefins.

18. The process according to claim 17, wherein the quantity of polar unsaturated monomers ranges from 0.4 to 1.5% with respect to the polyolefins.

19. The process according to claim 1, carried out at a temperature ranging from 80 to 250°C, for a time ranging from 1 to 1800 seconds.

20. The process according to claim 19, wherein the temperature ranges from 140 to 200°C and the time ranges from 30 to 600 seconds.

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